

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

Claims 1-10 (Cancelled).

11. (Currently Amended) A discrimination sensor that optically detects a surface structure of an object by scanning a surface of the object, the discrimination sensor comprising:

a sensor unit having an optical path opening wider in a direction perpendicular to a scanning direction along which the object is scanned than in a direction parallel to the scanning direction;

an integrated light emitting and detecting unit located in the sensor unit and including

at least one light emitter emitting light,

a light detector detecting light emitted by the at least one light emitter and that is reflected from the object, and

a focusing optical system comprising a transparent body ~~in which, wherein~~
the at least one light emitter and the light detector are ~~disposed~~
embedded in the transparent body, and

the transparent body has an external surface including a first lens surface that focuses the light emitted from the at least one light emitter towards the optical path opening, and a second lens surface that focuses light that is emitted from the at least one light emitter, that is reflected from the object, and that is incident on the light detector.

Claim 12 (Cancelled).

13. (Previously Presented) The discrimination sensor according to claim 11, wherein

the at least one light emitter individually emits a plurality of sensing light beams having wavelengths that differ from each other; and

the light detector detects the sensing light beams reflected from the object independently when respective sensing light beams are individually emitted.

14. (Previously Presented) The discrimination sensor according to claim 13, wherein the light detector sequentially detects the sensing light beams reflected from the object when respective sensing light beams are individually emitted.

Claims 15 and 16 (Cancelled).

17. (Previously Presented) The discrimination sensor according to claim 13, wherein the plurality of sensing light beams includes a first sensing light beam having a wavelength in a range from substantially 700 nm to substantially 1600 nm, and a second sensing light beam having a wavelength in a range from substantially 380 nm to substantially 700 nm.

18. (Previously Presented) The discrimination sensor according to claim 11, wherein the plurality of sensing light beams includes a first sensing light beam having a wavelength in a range from substantially 800 nm to substantially 1000 nm, and a second sensing light beam having a wavelength in a range from substantially 550 nm to substantially 650 nm.

19. (Previously Presented) The discrimination sensor according to claim 11, wherein the plurality of sensing light beams includes a first sensing light beam having a wavelength of substantially 940 nm, and a second sensing light beam having a wavelength of substantially 640 nm.

20. (Previously Presented) The discrimination sensor according to claim 11 further comprising a computation/determination unit that performs a computation on a discrimination signal output from the light detector when light reflected from the object is detected, and determines whether the discrimination signal is within a predetermined tolerance range.

Claim 21 (Cancelled).

22. (Previously Presented) The discrimination sensor according to claim 13, wherein the plurality of sensing light beams includes a first sensing light beam having a wavelength in a range from substantially 800 nm to substantially 1000 nm, and a second sensing light beam having a wavelength in a range from substantially 550 nm to substantially 650 nm.

23. (Previously Presented) The discrimination sensor according to claim 13, wherein the plurality of sensing light beams includes a first sensing light beam in a band having a wavelength of substantially 940 nm, and a second sensing light beam having a wavelength of substantially 640 nm.

24. (Currently Amended) The discrimination sensor according to claim 11, wherein the first and second lens surfaces are adjacent each other on the external surface of the transparent body.

25. (Currently Amended) The discrimination sensor according to claim 11, wherein
the at least one light emitter includes a first light emitter emitting light at a first wavelength and a second light emitter emitting light at a second wavelength,

the ~~focusing optical system~~ transparent body includes on the external surface a third lens surface that focuses the light emitted from the second light emitter towards the optical path opening,

the first lens surface focuses the light emitted from the first light emitter towards the optical path opening, and

the first and second light emitters are disposed ~~in~~ embedded within the transparent body.

26. (Currently Amended) The discrimination sensor according to claim 25, wherein

the light detector is disposed between the first and second light emitters,

the second lens surface is adjacent the first and third lens surfaces on the external surface of the transparent body, and

the light detector is disposed between the first and second light emitters within the transparent body.